

What is claimed is:

1. A corrugating roll design for a corrugating machine comprising a pair of parallel, spaced apart, corrugating rolls which rotate in opposite directions on their respective rotational axes, the rotational axes of the corrugating rolls being spaced apart a predetermined distance, and each of the corrugating rolls being formed along its outer peripheral surface with longitudinally extending teeth with tooth tips and tooth roots, a paper medium to be corrugated adapted to be fed into a nip formed by the teeth of the corrugating rolls inter-engaging, and begin to be deformed as it moves into an actual corrugating impression zone in the nip where full engagement of the teeth takes place, thereby providing corrugations in the paper medium, characterized by depressions provided in the tops of the tooth tips of at least one of the corrugating rolls and spaced apart a predetermined distance along the length of the roll, each of said depressions having a bottom surface which is located to establish a spacing between the bottom surface of the depression and the tooth root of the other corrugating roll at said actual corrugation impression zone in the nip, said spacing being greater than the thickness of the medium.

2. A corrugating roll design according to claim 1, wherein, the ratio of the sum total of the axial lengths of said depressions to the transverse dimension of the paper medium measured longitudinally of said at least one of the corrugating roll is greater than a predetermined value.

3. A corrugating roll design according to claim 1, wherein, said bottom surface of each of said depressions is of a generally convex arc configuration in a direction toward the other

corrugating roll with a radius of curvature greater than that of the tooth tips of said at least one of the corrugating rolls in a plane generally perpendicular to the longitudinal direction of the roll. F. 2

5 4. A corrugating roll design according to claim 1, each of the depressions is provided at its opposite sides with ramps extending in a divergent fashion from the bottom surface thereof to the top of the tooth tip of said at least one of the corrugating rolls. F. 1, 2, 7

10 5. A corrugating roll design according to claim 1, each of the tooth profiles of the corrugating rolls comprising a combination of a plurality of arcs that are symmetrical with respect to a line connecting the apex of the tooth tip and the rotational axis of the corrugating roll. F. 1

15 6. A corrugating roll design according to claim 1, said depressions of adjacent tooth tips of said at least one of the corrugating rolls are offset from one another along the length of the corrugating roll. F. 2, 4, 5

20 7. A corrugating roll design according to claim 5, said depressions are disposed in a helical pattern along the peripheral surface of the corrugating roll. F. 2, 4, 5

8. A corrugating machine comprising the pair of corrugating rolls according to claim 1, said corrugating rolls cooperating to provided a corrugated paper medium, <sup>via 2, 2, 4</sup> gluing means for applying glue to the flute tops of the corrugated medium, and pressure means disposed downstream of the gluing means for cooperating with one of the corrugating rolls to compress the corrugated medium and a liner therebetween to bond them.

9. A double facer corrugating machine comprising a pair of parallel, spaced apart, corrugating rolls which rotate in opposite

directions on their respective rotational axes, said rotational axes of the corrugating rolls being spaced apart a predetermined distance, and each of said corrugating rolls being formed along its outer peripheral surface with longitudinally extending teeth with

5 tooth tips and tooth roots, a paper medium to be corrugated adapted to be fed into a nip formed by the teeth of the corrugating rolls inter-engaging, and begin to be deformed as it moves into an actual corrugating impression zone in the nip where full engagement of the teeth takes place, thereby providing

10 corrugations in the paper medium, each of said corrugating rolls having depressions provided in the tops of the tooth tips thereof

and spaced apart a predetermined distance along the length of the roll, each of said depressions having a bottom surface which is

15 located to establish a spacing between said bottom surface of the depression and the tooth root of the other corrugating roll at said

actual corrugation impression zone in the nip, said spacing being greater than the thickness of the medium; first gluing means for

applying glue to the flute tops of one of faces of the corrugated medium; first pressure means disposed downstream of the first

20 gluing means for cooperating with the one of the corrugating rolls to compress the glued flute tops of the one face of the corrugated medium and a first liner therebetween to bond them; second

gluing means disposed downstream of the first pressure means for applying glue to the flute tops of the other face of the paper

25 medium; and bonding means disposed downstream of the second gluing means for bonding a second liner web to the glued flute

tops of the other face of the corrugated medium.